SECTION 07840

FIRESTOPPING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes
   1. Provision of firesafing, firestopping and smoke seal materials as indicated as well as the following areas:
      a. Penetrations located outside of wall sections.
      b. Penetrations located outside fire resistive shaft enclosures.
      c. Penetrations located in construction sontaining doors required to have a temperature -rise rating.
      d. Penetrating items larger than a 4 inch diameter nominal pipe or 16 square inches in overall cross-sectional area.
      e. All openings in fire rated floors and wall assemblies, both blank (empty) and those accommodating penetrating items such as cables, conduits, pipes and ducts.
   2. One installer shall have sole responsibility for installation of fire stopping for entire Project, including Mechanical and Electrical work.

B. General provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

C. Related Sections
   1. Section 09250 - Gypsum Board: Provision of gypsum board wall system.
   2. Division 15 - Mechanical: Penetrations for mechanical work.
   3. Division 16 - Electrical: Penetrations for electrical work.

1.02 REFERENCES

A. ASTM - American Society for Testing and Materials
   1. C920 - Standard Specification for Elastomeric Joint Sealants.
   2. E84 - Test Method for Surface Burning Characteristics of Building Materials.
   3. E119 - Method for Fire Tests of Building Construction and Materials.
   4. E814 - Standard Test Methods for Fire Tests of Through-Penetration Fire Stops.

B. CBC - California Building Code, 2001 Edition

C. UL - Underwriters Laboratories, Inc.
   1. BMD - Building Materials Directory
   2. FRD - Fire Resistance Directory

1.03 SYSTEM DESCRIPTION

A. Performance Requirements
   1. General: F-Rated Through Penetration Firestop Systems: Provide through penetration firestop systems with F ratings indicated, as determined per ASTM E814, but not less than that equaling or exceeding the fire resistance rating of the constructions penetrated.

2. T-Rated Through Penetration Firestop Systems: Provide through penetration firestop systems with T ratings, in addition to F ratings, as determined per ASTM E814, where indicated and where systems protect penetrating items exposed to contact with adjacent materials in occupiable floor areas. T-rated assemblies are required where the following conditions exist:
   a. Where firestop systems protect penetrations located outside of wall cavities.
   b. Where firestop systems protect penetrations located outside fire resistive shaft enclosures.
   c. Where firestop systems protect penetrations located in construction containing doors required to have a temperature-rise rating.
   d. Where firestop systems protect penetrating items larger than a 4 inch diameter nominal pipe or 16 square inch in overall cross-sectional area.
3. Fire Resistive Joint Sealants: Provide joint sealants with fire resistance ratings indicated, as determined per ASTM E119, but not less than that equaling or exceeding the fire resistance rating of the construction in which the joint occurs.
4. For firestopping exposed to view, traffic, moisture, and physical damage, provide products that do not deteriorate when exposed to these conditions.
   a. For piping penetrations for plumbing and wet-pipe sprinkler systems, provide moisture resistant through penetration firestop systems.
   b. For floor penetrations with annular spaces exceeding 4 inches or more in width and exposed to possible loading and traffic, provide firestop systems capable of supporting the floor loads involved either by installing floor plates or by other means.
   c. For penetrations involving insulated piping, provide through penetration firestop systems not requiring removal of insulation.
5. For firestopping exposed to view, provide products with flame spread values of less than 25 and smoke developed values of less than 450, as determined per ASTM E84.

1.04 SUBMITTALS

A. Product Data: Submit manufacturer's data on product characteristics, performance and limitation criteria.

B. Shop Drawings: Submit shop drawings detailing materials, installation methods, and relationships to adjoining construction for each through penetration firestop system, and each kind of construction condition penetrated and kind of penetrating item. Include firestop design designation of qualified testing and inspecting agency evidencing compliance with requirements for each condition indicated.
   1. Submit documentation, including illustrations, from a qualified testing and inspecting agency that is applicable to each through penetration firestop configuration for construction and penetrating items.
   2. Where Project conditions require modification of qualified testing and inspecting agency's illustration to suit a particular through penetration firestop condition, submit illustration approved by firestopping manufacturer's fire protection engineer with modifications marked.

C. Schedule of Firestopping: Submit complete list, for approval, of penetrations to be sealed, indicating location, fire rating of penetrated assembly, identification of penetration seal to be sealed, fire rating of penetration seal and evidence of acceptable testing.

D. Quality Control Submittals

1. Test Reports: Submit product test reports from, and based on tests performed by, a qualified testing and inspecting agency evidencing compliance of firestopping with requirements based on comprehensive testing of current products.
2. Certificates
   a. Submit certification by firestopping manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs) and are nontoxic to building occupants.
   b. Product certificates signed by manufacturers of firestopping products certifying that their products comply with specified requirements.
   c. Qualification data for firms and persons specified in AQuality Assurance' article to demonstrate their capabilities and experience. Include list of completed projects with project names, addresses, names of architects and owners, and other information specified.

1.05 QUALITY ASSURANCE

A. Fire Test Response Characteristics: Provide firestopping that complies with the following requirements and those specified under the ASystem Performance Requirements' article:
   1. Firestopping tests are performed by a qualified testing and inspecting agency. A qualified testing and inspecting agency is UL, Warnock Hersey, or another agency performing testing and follow-up inspection services for firestop systems that is acceptable to authorities having jurisdiction.
   2. Through penetration firestop systems are identical to those tested per ASTM E814 under conditions where positive furnace pressure differential of at least 0.01-inch of water is maintained at a distance of 0.78-inch below the fill materials surrounding the penetrating items in the test assembly. Provide rated systems complying with the following requirements:
      a. Through penetration firestop system products bear classification marking of qualified testing and inspecting agency.
      b. Through penetration firestop systems correspond to those indicated by reference to through penetration firestop system designations listed by UL in their AFire Resistance Directory', by Warnock Hersey, or by another qualified testing and inspecting agency.
   3. Fire-resistive joint sealant systems are identical to those tested for fire response characteristics per ASTM E119 under conditions where the positive furnace pressure differential is at least 0.01-inch of water, as measured 0.78-inch from the face exposed to furnace fire. Provide systems complying with the following requirements:
      a. Fire-Resistance Ratings of Joint Sealants: As indicated by reference to design designations listed by UL in their AFire Resistance Directory' or by another qualified testing and inspecting agency.
      b. Joint sealants, including backing materials, bear classification marking of qualified testing and inspection agency.

B. Information on Drawings referring to specific design designations of through penetration firestop systems is intended to establish requirements for performance based on conditions that are expected to exist during installation. Any changes in conditions and designated systems require the Architect's prior approval. Submit documentation showing that the performance of proposed substitutions equals or exceeds that of the systems they would replace and are acceptable to authorities having jurisdiction.

C. Qualifications

1. Installer: Engage an experienced installer who is certified, licensed, or otherwise qualified by the firestopping manufacturer as having the necessary experience, staff, and training to install manufacturer's products per specified requirements. A manufacturer's willingness to sell its firestopping products to the Contractor or to an installer engaged by the Contractor does not in itself confer qualification on the buyer.

D. Regulatory Requirements: Conform to CBC for fire resistance ratings and surface burning characteristics.

E. Provide firestopping products containing no detectable asbestos as determined by the method specified in 40 CFR Part 763, Subpart F, Appendix A, Section 1, APolarized Light Microscopy'.

F. Coordinating Work: Coordinate construction of openings and penetrating items to ensure that designated through penetration firestop systems are installed per specified requirements.

G. The Owner will employ and pay a qualified inspection agency to check installed firestopping systems for compliance with requirements.

H. Pre-Installation Conference
1. Prior to the start of work which involves cutting openings in fire wall construction for penetrations, conduct a meeting with installers of such work to identify fire and smoke barriers and required configurations of penetrations and to discuss the proper procedures and time schedule for cutting, patching and sealing penetrations in such assemblies, with emphasis on avoiding unnecessary cutting and patching.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Acceptable Manufacturers: Subject to compliance with requirements, provide products of one of the manufacturers as defined in the Systems and Applications Schedule in Part 3 of this Section, or accepted.

2.02 MATERIALS

A. Provide materials classified by UL to provide fire barrier equal to time rating of construction being penetrated.

B. Provide 100 percent asbestos free materials that comply with applicable codes and have been tested in accordance with UL 1479 or ASTM E814.

PART 3 - EXECUTION

3.01 APPLICATION

A. General
1. Provide firestopping for conditions specified whether or not firestopping is indicated, and, if indicated, whether such material is designated as insulation, safing, or sealant.
2. Do not install insulation specified in Section 07210 in place of firestopping materials specified in this Section.

B. Apply materials in accordance with printed instructions of the UL BMD, manufacturer's instructions, or architectural detail as indicated on the Systems and Applications Schedule.

C. Apply firestopping material in sufficient thickness to achieve rating to uniform density and texture.

D. Install material at top of fire rated walls and partitions; and at openings in fire rated walls and partitions which contain penetrating sleeves, piping, ductwork, conduit and other items that require firestopping, and at floor transitions.

E. Install firestop with sufficient pressure to properly fill and seal openings to ensure effective smoke seal.

F. Where floor openings without penetrating items are more than 4 inches in width and subject to traffic or loading, install firestopping materials capable of supporting same loading as floor.

3.02 FIELD QUALITY CONTROL

A. Immediately notify the Architect if the specified firestopping systems cannot meet the requirements of the Specification.

B. All areas of work must be accessible until inspected by the Architect and the Owner's applicable fire protection representative. Correct unacceptable firestops and provide additional inspection to verify compliance with this Specification at no additional cost.

3.03 CLEANING

A. Clean adjacent surfaces of firestopping materials.

B. Leave finished work in neat, clean condition with no evidence of spillovers and damage to adjacent surfaces.

3.04 SYSTEMS AND APPLICATIONS SCHEDULE

Construction Condition	Manufacturer	Product[1]	Installation Spec
A. Metal pipe or conduit through framed walls	Bio Fireshield	BFS100	Appropriate UL System or Architectural Detail
	or		
	Bio Fireshield	Biostop 500	UL System WL1021
	or		
	3M	CP2SWB+	UL System 147A
	or		
	Hilti	FS605	UL System WL1056, 1058
	or		
	Hilti	FS601	UL System WL1053, 1060
	or		
	Specified Technologies	SpecSeal Series 100 Sealant/Putty	UL System WL1028, 1029

B. Metal pipe or conduit through concrete floors	Bio Fireshield or Bio Fireshield or 3M or Hilti or Hilti or Specified Technologies	BFS200 BFS100 CP2SWB+ FS605 FS601 SpecSeal Series 100 Sealant/Putty	Appropriate UL System or Architectural Detail UL System CAJ1031 UL System 319 UL System CAJ1154, 1155, 1156 UL System CAJ1150, 1158 UL System CAJ1079, 1142
C. Insulated metal pipe through framed walls	3M or Bio Fireshield or Hilti or Specified Technologies	FS195, CP25N/S Biostop 500 FS611A SpecSeal Series 100 Sealant/Putty	UL System 147 UL System WS5015 UL System WL5024, 5025, 5026, 5027, 5028, 5029 UL System WL5033, 5014, 1049
D. Insulated metal pipe through concrete floors	3M or Bio Fireshield or Hilti or Specified Technologies	See appropriate listing Biostop 500 FS611A SpecSeal Series 100 Sealant, Wrap Strip or Mortar	UL System 91, 152, 203 UL System CAJ5015 UL System CAJ5044, 5045, 5046 UL System CAJ5042, 5051
E. Plastic pipe through framed walls	3M or Bio Fireshield or Hilti or Specified Technologies	FS195, CP25N/S, RCI BFS1-9, BCF Series FS611A SpecSeal Series 100 Sealant, Wrap Strip or Collar	UL System 148 Manufacturer's Specification UL System WL2051, 2053 UL System WL2047, 2046, 2048, 2029
F. Plastic pipe through concrete floors	3M or Bio Fireshield or	CS195, FS195, CP25N/S, CP25S/L BFS1-9, BCF Series	UL System 64 Manufacturer's Specification

	Hilti or Specified Technologies	FS611A SpecSeal Series 100 Sealant, Wrap Strip or Collar	UL System CAJ5049 UL System CAJ2031, 2064, 2038, 2045, 2063
G1. Cable tray through concrete floors	Bio Fireshield or 3M or Hilti or Hilti or Specified Technologies	K10 CS195 FS611A FS635 SpecSeal Mortar	UL System CAJ4010 UL System 105 or 66 UL System CAJ3069 UL System CAJ4017 UL System CAJ80162
G2. Framed walls	Bio Fireshield or 3M or Hilti or Specified Technologies	K10 CS195 FS611A SpecSeal Series 100 Sealant	Appropriate UL System or Architectural Detail for 1 hr UL System 557 UL System WL3045, 3046, 3047 UL System WL4005
or G3. Alternately, terminate cable tray prior to fire wall (designer modify)	Bio Fireshield or Hilti or Specified Technologies	BFS100 FS611A SpecSeal Series 100 Sealant or Putty	Appropriate UL System or Architectural Detail UL System WL3046, 3047 UL System WL3024, 3025, 8003
H. Telephone, fiber optic, and other small miscellaneous conductors through framed walls	Bio Fireshield or 3M or Hilti or Specified Technologies	BFS100, BFS200 CP25N/S FS611A SpecSeal Series 100 Sealant or Putty	UL System 247 UL System 149 UL System WL3046, 3047 UL System WL3024, 3025
I. Control joints, wall/floor joints, framed and concrete	Bio Fireshield or 3M or Hilti	BFS100, BFS200 CP25N/S, CP25S/L	Manufacturer's Specifications Manufacturer's Specifications Manufacturer's

	or Install UL rated assembly that meets ASTM C920, Class A movement	FS601	Specifications
J. Curtain wall/ construction gap	Bio Fireshield or 3M or Hilti or Install UL rated assembly that meets ASTM C920, Class A movement	BFS100, BFS200 CP25N/S, CP25S/L FS601	Manufacturer's Specifications Manufacturer's Specifications Manufacturer's Specifications
K. Noninsulated HVAC ducts	Bio Fireshield or 3M or Hilti or Specified Technologies	BFS100, BFS200 CP25N/S, CP25S/L FS Series SpecSeal Series 100 Sealant	Manufacturer's Specifications Manufacturer's Specifications Obtain Manufacturer's engineering recommendation Obtain Manufacturer's engineering recommendation
L. Seismic and other large building joints	Any UL listed system or Install UL rated assembly that meets ASTM C920, Class A movement		

[1] See UL Listing or Manufacturer's specifications for associated components not listed.

Insulated cable, bus ducts, glass pipe and other penetrations and construction conditions not listed above shall be fiestopped with an approved UL system as defined by UL FRD.

END OF SECTION